

\$1.50

SEPTEMBER, 1985
VOL.5 NO.8

M.A.C.E. JOURNAL

"Devoted Exclusively To The Atari Computer User"

IN THIS
ISSUE:

MACE JOURNAL
PROGRAM LISTER

ATARI BANDWIDTH

VISUALIZER REVIEW

JACK TRAMIEL
INTERVIEW

CHRIS CRAWFORD
ON ASSEMBLY
LANGUAGE

M.S.

... AND MORE!!

Published by the Michigan Atari Computer Enthusiasts



FIRESIDE CHAT



Have you seen the competition lately? The Atari ST is now available in most areas and, soon, the Amiga will be also. A real Amiga can be seen, as some of you may know, at Family Computer Center in Berkley. One thing is for certain, the Amiga is a very, very nice machine. A big plus for the Amiga is the IBM emulator. Just how compatible it makes it, I'm not sure. But nonetheless a feature like that is a move in the right direction.

There's a point I'm trying to make here so let's see how it comes across.

As we all know, the 8 bit Atari (400/800), was a machine that was really ahead of its time. It had powers and abilities far beyond those of mortal computers. And, it still does. Atari must be "state of the art" technology! But, the ST, that's a different question. Here we have a totally different machine. With an ST your moving up to the 16 bit, super memory world. Do you owe it to yourself and Atari do buy one because it bears the Atari label? Well of course not! Upgrading, or whatever expression you'd prefer to use, is a serious matter and there's a lot to be considered as far as software availability and support. The ST is nice but a lot of 16 bit machines are nice. You owe it to yourself to look in all aspects of your next computer. Don't be a "name" buyer.

I called Digital Research and asked them about the GEM for Atari and just what it would or wouldn't do. Guess what! They didn't know either. Atari has licensed GEM from Digital Research and has modified it to meet their needs. Even the folks at D.R. didn't know the extent of the mods. One thing you should know. GEM is not an operating system it is a shell of the OS that is already there. Software that runs on one machines GEM will not necessarily run on another.

Well folks, my year is up. Next month we'll be opening the meeting with elections. Your officers, whoever they may be, need your support! This our club. Its success, or failure, depends on all of us, not just 10 people. Only a couple of people during the

entire year bothered to call or attend an officers meeting. When nine people try to decide what several hundred would like to see, something goes wrong. People don't like to speak up, ask questions, whatever. Why? There's nothing to be afraid of. It's frustrating when you hear of other groups starting up because they are not happy with MACE, but I wonder how many of their members bothered to tell MACE why they weren't happy? None that I know of. You have a club here that has national recognition, a vast public domain library, one of the nicest newsletters of any group and is able to provide new user classes to its members at no charge. My God, people, don't just sit there and watch it all go by! We're all in this together.

Some of your officers will run for re-election next month and we'll see some new faces also as some retire. What have we accomplished you say? Well, here it goes, the list of credits. Membership is about the same as it was last year at this time. Approximately 800, that's about -5 from a year ago. We have cut the operating costs of the Journal, with a lot of research by Ann, by over \$700.00 a month. We have trimmed the operating costs of the Disk Library by over 50% and now it is almost self sufficient through the blank disk sales. We have started, at no cost to members, a New User Forum (which has been done in the past, for a fee) and have brought back "group purchases" which haven't been with us for well over a year. You have a great group of officers here. They have all done an outstanding job and it has been a great pleasure working with them all!

Kirk

The MACE Journal is published monthly by the Michigan Atari Computer Enthusiasts. Unless otherwise noted, material published in the Journal is in the public domain and may be reproduced for private or user group use providing proper credit is given.

MACE JOURNAL PROGRAM LISTER

by Ann McBain Ezzell

There are a number of listing programs around which use the graphics capabilities of dot matrix printers to reproduce the special Atari characters (control characters and inverse video) which tend to send printers into paroxysms of gibberish. (You may remember the program "Lister" which appeared in the December '84 Journal.) Unfortunately, owners of letter quality printers or oddball dot matrix printers are out of luck when it comes to such programs.

The MACE Journal Program Lister (MJPL) is the answer for anyone unable to use a conventional graphics-based listing program. It has been written so that it can be configured to support even the feature-poor Atari 1027 printer. Any printer which will underline can now be used to produce legible listings of Atari programs, even those containing special non-ASCII characters.

To use MJPL, type in the listing (see the MACE Journal Listing Conventions printed at the end of the program) and save it on disk or tape. The program as printed is set up for Gemini printers and will print in the condensed (17 cpi) font using 132 columns and with a slashed zero. To use it with other printers, check your manual and insert the proper codes in lines 610, 625 and 635. Be sure to save the corrected version before using it, just in case...

MJPL works on programs which have been LISTed to disk or tape (LIST "D:filename" or LIST "C:"). When you run the program, the screen will go blank momentarily, then you will see a title display which explains the conventions used by MJPL. Press any key to continue. You must then specify if the program is to be read in from disk or tape, and give a drive number and filename for disk access. MJPL will confirm the program name and then instruct you to prepare the program disk or tape and to set the printer to the top of a page.

When everything is set, press any key and MJPL will start to read your program into memory. It reads up to 60 lines at a time to save time. It then checks each line for special characters and replaces them as necessary with descriptive phrases. The revised program line is then sent to the printer. This continues until all program lines have been read in, processed and printed. You can list another program or return to BASIC.

[The printer codes in the following section were taken from ABCs of Atari Computers by David E. Mentley, (c) 1984 by Datamost, Inc. I have no idea if they are correct, but present them here as examples of how to configure MJPL for some of the more popular printers. You may be able to use configurations other than those listed here; check your printer manual if you have problems.]

Atari 1025 and 1027

Line 610: About the only thing you can do is set the printer to 80 column mode with ESC L. (This would replace the string that starts out "ESC @ ESC B" etc.)

Line 625: Make UON\$ equal to ESC CTRL-Y and UOFF\$ equal to ESC CTRL-Z.

Line 635: LLEN = 80 for 80 column mode.

Atari 825

Line 610: For condensed printing, use ESC CTRL-T. Otherwise, you can remove the ?#3 statement from that line.

Line 625: Make UON\$ equal to CTRL-O and UOFF\$ equal to CTRL-N.

Line 635: For condensed font, LLEN = 132. Otherwise, LLEN = 80.

Epson Printers (e.g. MX-80 w/Graftrax, FX-100)

Line 610: Reset all functions with ESC @. CTRL-O selects condensed printing. These are the same as for the Gemini, so the margin selection codes may also be the same. If it doesn't work, check your manual.

Line 625: Same as for Gemini.

Line 635: LLEN = 132 for condensed, 80 for 10 cpi.

NEC 8023A

Line 610: Reset is ESC @. Condensed printing is ESC Q. Check your manual for margin codes.

Line 625: ESC X turns underlining on; ESC Y turns it off.

Line 635: Same as for Gemini, depending on margin and font selection.

Mannesman Tally

Line 610: These seem to be the same as for Gemini.

Line 625: Turn underlining on with ESC X and off with ESC Y.

Line 635: Set LLEN based on margins chosen.

When replacing characters in the printer strings for your printer, be sure to type the characters without spaces between them. Don't forget to set the value of LLEN in line 635, or your page length will not be correct.

If you're interested in how MJPL works, keep reading. Those of you who simply want to use the program are excused and may begin keying it in now.

Line 110 defines some constants and variables that you might want to change if you decide to alter the program. LIM is the number of lines read in from storage in one pass. You could increase LIM if you have enough RAM. INSERT refers to the insertion subroutine. If you renumber the program, you must change INSERT. UNDER, CTROL and LINES are used to keep track of underlined (inverse) or bracketed (control) characters and the number of physical lines which have been printed.

Lines 120-170 DIMension and define some strings, primarily the descriptions which replace special characters in the listing. The trailing blanks in DEV\$ and ANS\$ in line 170 must be included.

Lines 200-350 set up the title display. Line 360 waits for a keypress by opening a channel to the keyboard ("K:") and GETting a byte. The program will halt until a key is pressed.

Lines 400-570 get and confirm information about the file to be printed. Line 430 waits for a keypress, looping back to itself until either a "D" (CHR\$(68)) or a "C" (CHR\$(67)) is typed. This structure can be very useful if you want to limit keyboard input to one or two characters.

Lines 600-635 define the printer control codes to be used. You must change lines 610, 625 and 635 to conform to your printer codes if they are not the same as for a Gemini printer (or if you want to change the font or margin). If your printer cannot underline but can print italics or some other distinctive font, you could substitute those codes for the ones in UON\$ and UOFF\$. (INCR, by the way, helps keep track of the number of lines generated by the printer. More about that later.)

The TRAP statement in line 640 sends program execution to line 1000 if an error is encountered. If there are no errors, the file to be listed (on disk or tape) is opened for reading, then six blank lines are sent to the printer to space the listing an inch down from the top of the page. If you want your listing to start where the printhead is set, remove the FOR-NEXT loop from line 640.

Line 650 reads in program lines, up to the limit set by LIM. If there are fewer than LIM lines left unread in the file, an End Of File Error will occur and the program will be TRAPped to line 1000. Otherwise, each program line is read into A\$, then appended to HOLD\$. The length of each substring (program line) is stored in the array SLEN(). Once this operation is done, we have a long string (HOLD\$) which consists of 60 (LIM) program lines all strung together, and the array SLEN() which contains the length of each substring. The values in SLEN() can be used to extract the substrings back out from HOLD\$ (line 670). Why do we put the program lines into HOLD\$ if we are just going to take them out again? Reading a lot of lines in from disk or tape at once is much faster than reading in a line, processing it, printing it, and then reading in the next line.

Lines 680-710 check the program line for non-ASCII characters and jump to the insertion subroutine when one is encountered. OUT\$ is formed one character at a time as this loop reads through the program line (A\$).

Once OUT\$ has been created, lines 715-760 check to see if there is room on the current page to print the entire output string. OLEN is the number of characters that will actually be printed when OUT\$ is sent to the printer.

When underlined characters are sent, the length of OUT\$ will be greater than the number of characters printed, because the codes to turn underlining on and off are included in the length of OUT\$, but are not printed. Thus OLEN is calculated by subtracting the value of SUBTR (this is equal to the number of non-printing characters in OUT\$) from LEN(OUT\$).

PLINES is the number of printer lines generated when OUT\$ is printed. It is calculated from OLEN, the number of printed characters in OUT\$, and LLEN, the maximum number of characters in a printed line. The expression

$(\text{INT}(\text{OLEN}/\text{LLEN}) < \text{OLEN}/\text{LLEN})$

will evaluate to 0 if OLEN is an exact multiple of LLEN and 1 if it is not. Using this sort of structure sometimes allows you to get away from IF-THEN statements. Let's look at a couple of examples to see how PLINES is calculated. Assume an 80 column printout and a processed program line of 120 printing characters: OLEN = 120 and LLEN = 80. PLINES would equal 2:

```
PLINES = INT(120/80)+(INT(120/80)<120/80)
PLINES = INT(1.5)+(INT(1.5)<1.5)
PLINES = 1 + (1<1.5)
[1<1.5 is a true statement, so the expression
has a value of 1:]
PLINES = 1 + 1 = 2
```

Indeed, you would expect 120 characters to produce two (actually one and a half) printed lines. Since the next program line will start on its own line, we count the result as two lines.

What if OLEN is an exact multiple of LLEN? Let's let OLEN = 80 and LLEN = 40:

```
PLINES = INT(80/40)+(INT(80/40)<80/40)
PLINES = INT(2)+(INT(2)<2)
PLINES = 2 + (2<2)
[2<2 is false, so the expression evaluates to 0:]
PLINES = 2 + 0 = 2
```

We need to know the value of PLINES to keep track of how many lines have been printed so

that we can skip over the perforation between pages. (Neatness counts!) LINES, which is initially set to 0 (line 110), is incremented by PLINES after each OUT\$ is created but before it is printed. If LINES is greater than 54 (the number of printed lines we want on each page), line 730 prints enough blank lines to get to the proper place on the next page, then prints OUT\$. LINES is reset to PLINES rather than 0 because PLINES lines will have been printed on that next page.

The FLAG in line 750 is set when the end of the file has been reached, indicating that there are no more program lines to read in from the storage device. (IF FLAG THEN 800 is the same as saying IF FLAG=1 THEN 800.) If the end of the file has not been reached, the program cycles back to line 650 to read in more program lines.

Lines 800-840 are reached once the program listing is complete and offer the chance to print another file or exit from the program.

Lines 900-960 insert the descriptive phrases and underlining control codes into OUT\$ as needed. "A" is the ATASCII value of the special character in the program line. Notice in lines 902-930 that the description strings (ESC\$, U\$, etc.) are not appended to OUT\$ but replace the last character of OUT\$ (the special character). Once the description string has been added to OUT\$, the program returns from the subroutine.

Inverse video and control characters require special handling because of the addition of underlining codes and/or brackets. While the first set of characters treated only appear in one form (up arrow, left arrow, etc.), it is possible for a character to be both a control character and inverse video. Line 932 checks to see if the character is inverse video (ATASCII value greater than 127). If it is, the codes to turn underlining on (UON\$) replace the last character of OUT\$, a flag (UNDER) is set, and the value of A is reduced by 128 (effectively converting it to normal video).

Lines 934-940 handle certain special cases of control characters, setting the CTRL flag when necessary. Line 942 handles the other control characters (e.g. CTRL-R) by attaching

a left curly bracket (CHR\$(123)) and the character corrected to normal video (by adding 64 to the ATASCII value). Line 944 will output the corrected character if it hasn't already been put into OUT\$. Line 950 appends a right curly bracket to control characters and resets the CTRL flag to zero.

Line 955 appends the codes to turn underlining off, resets the UNDER flag, and increments SUBTR. (Remember?) The value of SUBTR equals the number of non-printing characters in OUT\$ because it increases by INCR each time an underlined character is printed. INCR, you will recall, is the number of characters in the combination of "underline on" and "underline off" codes.

The last section of code, lines 1000-1100, consists of the error processing routines. Location 195 holds the number of the error that caused the program to be TRAPPED. Error 136 is the End of File Error. Line 1010 sets FLAG to 1 (remember line 750?) to tell the program that there are no more lines to read in from the file and goes back to 660 to start processing the lines which have already been read in. LIM must be reset in line 1010 so that line 670 will not try to read too far into HOLD\$.

Lines 1020-1040 announce a few common errors to make the program a bit more friendly. If the error which TRAPPED the program is not listed, line 1050 prints a generic error statement. Any error other than End of File will end the program. You could write fancier error handling routines, but these do the job.

Congratulations on slogging your way through this explanation. I hope you picked up a few techniques for use in your own programs. Enjoy the program, and feel free to modify it.



```

100 REM listing program for programs w
hich have been LISTed to disk or tape
102 REM see lines starting at 600 to c
onfigure program for your printer
104 REM does not require printer with
graphics capabilities
110 LIM=60:INSERT=900:UNDER=0:CTRL=0:
LINES=0
120 DIM A$(120),RM$(119),C$(7),U$(4),D
$(6),L$(6),R$(7),B$(8),DEL$(8),I$(8),D
LN$(10),ILN$(10),T$(5)
130 DIM CT$(9),ST$(9),BL$(6),ESC$(8),D
EV$(16),FILE$(15),NAME$(12),ANS$(6),HO
LD$(LIM*120),OUT$(1024),SLEN(LIM)
140 REM {SEMI-COLON}=CHR$(123) for lef
t curly brackets; {CLEAR}=CHR$(125) for
right curly brackets
150 C$="{SEMI-COLON}CLEAR{CLEAR}":U$="{
{SEMI-COLON}UP{CLEAR}":D$="{SEMI-COLON
}DOWN{CLEAR}":L$="{SEMI-COLON}LEFT{CLE
AR}":R$="{SEMI-COLON}RIGHT{CLEAR}":B$=
"{SEMI-COLON}BACK S{CLEAR}":DEL$="{SEM
I-COLON}DELETE{CLEAR}":I$="{SEMI-COLON
}INSERT{CLEAR}"
160 DLN$="{SEMI-COLON}DEL LINE{CLEAR}":
ILN$="{SEMI-COLON}INS LINE{CLEAR}":T$
="{SEMI-COLON}TAB{CLEAR}":CT$="{SEMI-C
OLON}CLR TAB{CLEAR}":ST$="{SEMI-COLON}
SET TAB{CLEAR}":BL$="{SEMI-COLON}BELL{
CLEAR}":ESC$="{SEMI-COLON}ESCAPE{CLEAR
}"
170 DEV$="CASSETTEDIK"      ":ANS$="YESN
Q "
200 GRAPHICS 0:POKE 710,130:POKE 559,0
:POKE 82,1
210 ? "{DOWN}"      MACE JOURNAL PROGRA
M LISTER"
220 ? "{DOWN}This program will print y
our programs":? "and replace certain o
f the special"
230 ? "graphics characters with a desc
ription":? "(e.g. ";CHR$(34);"CLEAR";C
HR$(34);") printed inside curly"
240 ? "brackets. Control characters w
ill"
250 ? "appear inside curly brackets.
Inverse":? "video characters will be u
nderlined."
300 ? "{DOWN}Descriptions and their ke
ystrokes":POKE 82,0:
310 ? "CLEAR      ESC SHF < {SHIFT =>UP
      ESC CTL -":? "DOWN      ESC CTL =
      {SHIFT =>LEFT      ESC CTL +"
320 ? "RIGHT      ESC CTL * {SHIFT =>BAC

```



```

K S   ESC DELETE":? "DELETE   ESC CTL
BS{SHIFT =}INSERT   ESC CTL >"
330 ? "DEL LINE ESC SHF BS{SHIFT =}INS
LINE ESC SHF >":? "BELL   ESC CTL 2
{SHIFT =}ESC   ESC ESC"
340 ? "TAB   ESC TB   {SHIFT =}CLR
TAB   ESC CTL TB":? "SET TAB   ESC SHF
TB{SHIFT =}"
350 POKE 752,1:? "{DOWN}{TAB}{LEFT}<PR
ESS ANY KEY TO CONTINUE>";POKE 559,34
360 OPEN #2,4,0,"K:":GET #2,X:CLOSE #2
400 ? "{CLEAR}":POKE 82,1:POKE 752,0
410 ? "{DOWN}This program will only wo
rk on files":? "which have been LISTed
to disk or tape."
420 ? "Input file from":? "{TAB}Disk o
r Cassetette? ";:OPEN #2,4,0,"K:"
430 GET #2,X:IF X<>68 AND X<>67 THEN 4
30
440 CLOSE #2:? DEV$((X-67)*8+1,(X-67)*
8+8)
450 IF X=67 THEN FILE$="C:":GOTO 520
460 ? "{DOWN}{TAB}Drive number (1-4) "
;:OPEN #2,4,0,"K:"
470 GET #2,X:IF X<49 OR X>52 THEN 470
480 CLOSE #2:? CHR$(X+128)
490 FILE$="D":FILE$(2)=CHR$(X):FILE$(3
)=":"
500 ? "{DOWN}Program name ";:INPUT NAM
E$
510 FILE$(LEN(FILE$)+1)=NAME$
520 ? "{DOWN}File ";FILE$;" will be pr
inted.":? "{DOWN}{TAB}Correct? (Y/N) "
;:OPEN #2,4,0,"K:"
530 GET #2,X:IF X<>89 AND X<>78 THEN 5
30
540 CLOSE #2:? ANS$(4-(X>78)*3,6-(X>78
)*3):IF X=78 THEN FOR W=1 TO 100:NEXT
W:GOTO 400
550 ? "{DOWN}Prepare program disk or t
ape.":? "Set printer to the top of a p
age and":? "turn it on."
560 POKE 752,1:? "{DOWN}{DOWN}{TAB}<PR
ESS ANY KEY TO CONTINUE>"
570 OPEN #2,4,0,"K:":GET #2,X:CLOSE #2
600 REM these values will configure a
Gemini 10 printer as follows:
602 REM {ESCAPE}@=reset to power on, {
ESCAPE}B{C}=17 cpi, {ESCAPE}M{A}=left
margin 1, {ESCAPE}Q{D}=right margin 13
2, {ESCAPE}V{A}=zero with slash
604 REM you must insert the appropriat
e codes to configure your printer into
the string in line 610

```

```

610 TRAP 1000:OPEN #3,8,0,"P:":? #3; "{
ESCAPE}@{ESCAPE}B{B}{ESCAPE}M{I}{ESCAP
E}Q.{ESCAPE}V{A}";
620 REM put your printer codes for tur
ning underlining on and off in strings
UON$ and UOFF$
625 DIM UON$(3),UOFF$(3):UON$="{ESCAPE
}-{A}":UOFF$="{ESCAPE}-{COMMA}"
630 REM set the variable LLEN equal to
the number of characters in one print
er line (e.g. LLEN=80 for 80 columns)
635 LLEN=38
640 TRAP 1000:OPEN #2,4,0,FILE$:FOR IT
=1 TO 6:? #3:NEXT IT
650 ST=1:FOR I=1 TO LIM:INPUT #2,A$:L=
LEN(A$):HOLD$(ST,ST+L-1)=A$:SLEN(I)=L:
ST=ST+L:NEXT I
660 ST=1:IF LIM=0 THEN 750
670 FOR I=1 TO LIM:SUBTR=0:L=SLEN(I):A
$=HOLD$(ST,ST+L-1):ST=ST+L:OUT$=""
680 REM check for control, inverse, or
graphics characters
690 FOR C=1 TO L:A=ASC(A$(C)):OUT$(LEN
(OUT$)+1)=A$(C,C)
700 IF A<32 OR A=96 OR A>122 THEN GOSU
B INSERT
710 NEXT C
715 REM see if room enough to print li
ne on current page - if not, skip to n
ext page and reset line counter
720 OLEN=LEN(OUT$)-SUBTR:PLINES=INT(OL
EN/LLEN)+(INT(OLEN/LLEN)<>OLEN/LLEN)
730 LINES=LINES+PLINES:IF LINES>54 THE
N FOR IT=1 TO 66-LINES+PLINES:? #3:NEX
T IT:LINES=PLINES
740 ? #3;OUT$:NEXT I
750 IF FLAG THEN 800
760 GOTO 650
800 ? #3:POKE 77,0:? "{CLEAR}{BELL}{DO
WN}{DOWN}LISTING COMPLETE.":CLOSE #2:C
LOSE #3
810 POKE 752,0:? "{DOWN}{TAB}Another l
isting? Y/N ";:OPEN #2,4,0,"K:"
820 GET #2,X:IF X<>89 AND X<>78 THEN 8
20
830 CLOSE #2:? ANS$(4-(X>78)*3,6-(X>78
)*3):IF X=89 THEN FOR W=1 TO 100:NEXT
W:RUN
840 END
900 REM insert description strings int
o output string
902 IF A=27 THEN OUT$(LEN(OUT$))=ESC$:
RETURN
904 IF A=28 THEN OUT$(LEN(OUT$))=U$:RE

```



```

TURN
906 IF A=29 THEN OUT$(LEN(OUT$))=D$:RE
TURN
908 IF A=30 THEN OUT$(LEN(OUT$))=L$:RE
TURN
910 IF A=31 THEN OUT$(LEN(OUT$))=R$:RE
TURN
912 IF A=125 THEN OUT$(LEN(OUT$))=C$:R
ETURN
914 IF A=126 THEN OUT$(LEN(OUT$))=B$:R
ETURN
916 IF A=127 THEN OUT$(LEN(OUT$))=T$:R
ETURN
918 IF A=156 THEN OUT$(LEN(OUT$))=DLN$
:RETURN
920 IF A=157 THEN OUT$(LEN(OUT$))=ILN$
:RETURN
922 IF A=158 THEN OUT$(LEN(OUT$))=CT$:
RETURN
924 IF A=159 THEN OUT$(LEN(OUT$))=ST$:
RETURN
926 IF A=253 THEN OUT$(LEN(OUT$))=BL$:
RETURN
928 IF A=254 THEN OUT$(LEN(OUT$))=DEL$
:RETURN
930 IF A=255 THEN OUT$(LEN(OUT$))=I$:R
ETURN
932 IF A>127 THEN OUT$(LEN(OUT$))=UON$
:UNDER=1:A=A-128
934 IF A=0 THEN OUT$(LEN(OUT$)+(UNDER=
1))="{SEMI-COLON}COMMA":CTRL=1:GOTO 9
50
936 IF A=96 THEN OUT$(LEN(OUT$)+(UNDER
=1))="{SEMI-COLON}PERIOD":CTRL=1:GOTO
950
938 IF A=123 THEN OUT$(LEN(OUT$)+(UNDE
R=1))="{SEMI-COLON}SEMI-COLON":CTRL=1
:GOTO 950
940 IF A=124 THEN OUT$(LEN(OUT$)+(UNDE
R=1))="{SEMI-COLON}SHIFT =":CTRL=1:GO
TO 950
942 IF A<32 THEN OUT$(LEN(OUT$)+(UNDER
=1))=CHR$(123):CTRL=1:OUT$(LEN(OUT$)+
1)=CHR$(A+64):GOTO 950
944 OUT$(LEN(OUT$)+1)=CHR$(A)
950 IF CTRL=1 THEN OUT$(LEN(OUT$)+1)=
CHR$(125):CTRL=0
955 IF UNDER=1 THEN OUT$(LEN(OUT$)+1)=
UOFF$:UNDER=0:SUBTR=SUBTR+6
960 RETURN
1000 REM error handling routines
1010 P=PEEK(195):IF P=136 THEN FLAG=1:
LIM=LIM-1:GOTO 660
1020 ? "{CLEAR}{BELL}";:POKE 752,1:IF

```

```

P=170 THEN ? "{DOWN}{DOWN}FILE NOT FOU
ND":GOTO 1100
1030 IF P=138 THEN ? "{DOWN}{DOWN}DEVI
CE DOES NOT RESPOND":GOTO 1100
1040 IF P=165 THEN ? "{DOWN}{DOWN}BAD_
FILE NAME":GOTO 1100
1050 ? "{DOWN}{DOWN}ERROR # ";P;" _AT_L
INE ";PEEK(186)+256*PEEK(187)
1100 POKE 752,0:END

```

MACE UNCLASSIFIEDS

GEMINI 10X FOR SALE

- 1 year old
- Original packaging & documentation
- \$199 or best offer

Call Craig at (313) 463-8734

WANTED:

Someone to fix a Rana disk drive. Call (313) 559-5919 and ask for Mike.

BBS UPDATES

There have been some changes since we last published a list of Detroit area BBSs. Sometime soon we will bring you a complete list, but for now here are the changes:

Trading Post BBS has been disconnected. You can reach MACE President Kirk Revitzer on his (boo, hiss) PC BBS at (313) 882-7104.

The CHAOS BBS in Lansing has a new number: (517) 371-1106.

Atari now has a California-based BBS for its users: (408) 745-5308.

Saving the best for last, I am pleased to announce that the Superboard is up and flying again at (313) 543-9805. This multi-drive board runs continuously at 300/1200 bps and features multiple message bases, including "Annie's Board", a user-helping-user feature where you can bring your questions and suggestions. Call today!

MACE JOURNAL LISTING CONVENTIONS

To reduce our readers' eyestrain, we have adopted a special method for listing programs. Programs will be listed in 38 column format, and certain characters will be replaced by an abbreviated form of their function, printed within curly braces (see below). Any characters to be typed in inverse video will be underlined, and control characters will be represented by their respective letters within curly braces. If a character within braces is also underlined, toggle the inverse video on and then hold down the control key while typing the character.

This method may seem awkward at first, but you should quickly get used to it, and the listings will be much easier to read. The special characters which will be spelled out are as follows:

When you see: You should type:

{CLEAR}	ESC SHIFT <
{UP}	ESC CTRL -
{DOWN}	ESC CTRL =
{LEFT}	ESC CTRL +
{RIGHT}	ESC CTRL x
{BACK S}	ESC DELETE
{DELETE}	ESC CTRL DELETE
{INSERT}	ESC CTRL INSERT
{DEL LINE}	ESC SHIFT DELETE
{INS LINE}	ESC SHIFT INSERT
{TAB}	ESC TAB
{CLR TAB}	ESC CTRL TAB
{SET TAB}	ESC SHIFT TAB
{BELL}	ESC CTRL 2
{ESC}	ESC ESC
{COMMA}	CTRL , (comma)
{PERIOD}	CTRL . (period)
{SEMI-COLON}	CTRL ; (semi-colon)
{SHIFT =}	SHIFT =

If you see: Type:

{A}	CTRL A
<u>A</u>	INV. VIDEO A
{ <u>A</u> }	INV. VIDEO CTRL A

ACE 80 & ACE 80 XL 80 COLUMN CARTRIDGE

* MACE SPECIAL *

~~\$45.95~~

(\$3 S/H & 4% MI TAX)

MAGIC SOFTWARE

3398 SEMINOLE TRAIL
MONROE, MI 48161
(313) 289-1823

THE
BAUDVILLE
BBS

GARDEN CITY, MI

300/1200 BPS
24 HOURS/7 DAYS

MIKE MITCHELL
SYSOP

313-535-5172

[Last month we put out a call for members interested in running for office at the September meeting to submit articles introducing themselves. Some hats came flying into the ring, along with these notes. -Ed.]

JOURNAL EDITOR

Michael Schiffer

Fellow Atarians, I would like your vote as MACE Journal Editor for 1985-86. For the past year I have been working with the other officers as Assistant Program Coordinator. I have helped Scott Garland plan and run each month's meeting. Also, I have been responsible for a number of articles and reviews for the Journal, including Ultima III, Fast Fingers, and a few Activision games among others.

I have owned my Atari 800 since September of 1981, and have been a member of MACE since January 1982. Since beginning humbly with a cassette recorder, I now have a system including a 1200 baud modem, printer, and disk drive. I know BASIC well, and have an understanding of assembly language.

If elected, I hope to continue to make the Journal as much a product of our members as possible. While the officers, especially our retiring Editor Ann Ezzell, have been the authors of a large fraction of the reviews and columns over the past year, it is important for members of MACE to realize that the Journal is a forum for YOUR ideas, opinions, and knowledge. I hope that we never return to the Bad Old Days of ten page issues, but the way to avoid that is for YOU to contribute. What did you think of that word processor you just bought? Would other members be interested in how you managed to hook up a hard disk drive to your Atari, or less ambitiously, why you selected a particular printer? If you have used AMODEM, MACETERM, and HomeTerm, which is the best, and why? While I plan to continue features such as the "Fireside Chat" from the President and to write a monthly column myself, I hope that most of my troubles will be fitting all of the articles handed to me

into the Journal. It can happen, if we work together to make it happen.

I have watched MACE grow from a small group, meeting in an elementary classroom, with 13 inch TVs scattered around the room, to the vast group we now have, meeting in the Southfield Civic Center Pavilion with a big-screen (often out of focus) projection system. Similarly, I have watched the "MACE Newsletter", held together with a staple in the upper left hand corner, grow into the MACE Journal, a true magazine, with advertisements from many area retailers. I don't think MACE is finished yet. With Atari making bold moves into the future, such as the ST series and the planned true 32-bit machine, I think that MACE, and the Journal, are moving into a new growth phase. I hope that I can be part of it, and that all of you will remain to keep MACE the largest, and the best, Atari user group in the world.

RECORDING SECRETARY

Doug Geiss

First of all, I know that the position of Recording Secretary isn't the most popular position. It usually gets dumped on someone who really doesn't want it and who doesn't have time to do it. I'm willing to take a little time, and try to do this position to the best of my ability.

The position calls for the Recording Secretary to take minutes of the officers' meetings. It was mentioned to me that I could take over the mailing of the MACE Journals, but since the bulk mailing permit has already been paid closer to the person who is doing the job now, I doubt that I will be taking on this job.

Well, you know I'll be up there, trying to get your vote. I'm fifteen, and you might think I'm not responsible enough to do this job. I run a BBS, and feel that this job will be a lot easier than doing that.

Thank you for your reading time. I'll see you at the elections!



SECTOR-ONE INTERNATIONAL

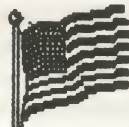
37220 TRICIA DRIVE
STERLING HEIGHTS, MI. 48077
313-978-2208

**POWER WITHOUT
THE PRICE**

SEE US
AT
M.A.C.E.



NEW AT SECTOR ONE



**TRADE IN'S
SERVICE DEPT.
SERVICE CONTRACTS
USED HARDWARE**

**WARRANTY WARNING!
SOME 520ST'S HAVE
NO WARRANTY**



**OUR ST SYSTEMS ARE
SOLD WITH A FULL
90 DAY SERVICE
WARRANTY**



**ASK ABOUT THE
WARRANTY FIRST!**

130XE 128K	\$149.00
800XL 64K	89.00
1200XL 64K	59.00
850 INTERFACE	109.00
1010 RECORDER	39.00
1020 PRINTER	39.00
1025 PRINTER	159.00
1027 PRINTER	199.00
1030 MODEM	69.00
1050 DISK DR.	159.00
LEGEND 880	239.00
CX75 LIGHT PEN	39.00
TOUCH TABLET	44.00
DISK PUNCHER	7.00
P820 PAPER ROLL	1.50
P822 PAPER ROLL	2.00
LOOSELEAF 4DSK	1.00
1050 US DOUBLER	
WITH CONST SET	59.00
ATARI ST BOOK	12.95
BASIC REF. BOOK	5.00
INSIDE AT. BASIC	6.00
COLOR PAPER	3.75
PRINT SHOP	35.00
GRAPHICS LIB.1	19.00
GEMINI RIBBON	1.75
1025 RIBBON	1.75



520STMS MONO.	729.
520STCS COLOR	895.
ST MODEM CABLE	24.
ST PRINTER CABLE	29.
ST DISKETTES 10	30.
ST SOFTWARE	SOON

SHIPPING: 5% AIR, APO, FPO: 8%

COD WELCOME IN USA: ADD \$2.00

BANDWIDTH AND THE ATARI

by Lance Hefner

Have you ever wondered why the 80-column devices available for the Atari do not look as nice as the displays on the higher priced micros? Why didn't Atari make the computers with an 80-column display in the first place? After all, we have seen 80-column devices demonstrated at MACE meetings. Why do monitors have better resolution than TVs and why are some monitors high resolution while others are medium resolution?

The answers to these questions center on the concept of bandwidth. Bandwidth may be defined as the number of times the video signal can be turned on and off per second. Most TVs have a bandwidth of approximately 3 megahertz. That is, they can turn the TV screen on and off 3 million times a second. This may seem like a lot, but you will soon see that it's actually about the minimum you can have for a viewable picture.

To understand the importance of bandwidth it is necessary to have a basic understanding of television technology. In the United States, the engineers designing TV back in the 30's came up with the current format based on 525 interlaced lines. These 525 lines are flashed on the screen 30 times a second. This works out to be 15,750 times per second that the TV beam is turned on and off just to create the vertical portion of the picture. If we divide the bandwidth (3 Mhz) of the standard TV by 15,750 we obtain the maximum number of times the TV beam can change in each horizontal line, which is 190. This means that we only have a horizontal resolution of 190 pixels. This has nothing to do with the number of horizontal pixels the computer is supposedly displaying; this is an inherent limitation of the TV set.

Atari's 40-column display starts to make a lot of sense when you realize that $190/40$ works out to just under 5 pixels per character. Subtract 1 pixel for separation of the characters and you have 4 pixels per character. This is about as low as you can go and maintain a readable display. It should be

noted that an increase in bandwidth will not affect vertical resolution as this is determined by the TV format, but it will have a direct effect on horizontal resolution: i.e., double the bandwidth and you double the maximum horizontal resolution. A monitor with a six Mhz bandwidth would be capable of displaying 40 columns with eight pixels per character instead of four as on a TV ($380/40=9.5$ less one for character separation). The noticeable higher quality of monitor displays is due to their higher bandwidth.

I don't know what bandwidth Atari chose for their computer, but a good bet would be that it was designed to be a little better than conventional TVs. In graphics 8 mode there are 320 horizontal pixels. $320 * 15,750$ is 5 Mhz. If we assume that the Atari was designed to match this graphics mode then we should expect to be able to see all 320 pixels on a monitor having a bandwidth of at least 5 Mhz. If we wish to obtain 80 columns with the same bandwidth we will now have 3 pixels per character ($320/80=4$ less one for separation). Remember producing an 80-column display on a standard TV will only resolve one or two pixels per character. This perhaps explains why Atari chose to use a 40-column format. By aiming their computer at the family market who would be using the household TV for a display, they were forced by bandwidth constraints to limit the number of columns to keep the display readable. The higher priced micros are aimed at a market where the user is expected to use a quality monitor. In that case the bandwidth is sufficiently high to permit a legible 80-column display.

The add-on devices for the Atari which create an 80-column display are at best going to deliver characters consisting of three pixels. With a good monitor this is legible. The only way to improve this is to make a hardware modification of the computer or to buy another system. The decision on whether to purchase an 80-column adapter for your Atari should be made with the knowledge that a monitor is a necessary expense. The display should also be examined before purchase to determine if it is acceptable to you. If it is, great. If not, well at least now you know why.

BEACH-HEAD

Access

Reviewed by C. M. Hostetler

Beach-Head is a five screen joystick game. There are four levels of difficulty, and these are available for one or two players. Your first choice is to determine whether or not you will take your fleet of ten ships through the "passage" or frontally assault the defending fleet. Taking the passage gives you an opportunity to score extra points as well as an advantage during the next two phases of the game (each "phase" being on a new screen). It is important to get as many ships as possible through the passage as you still have two screens of combat for your fleet to survive before you assault the beaches, and the number of tanks you'll have to assault the "final" pillbox is determined by having at least five ships survive (for ten tanks, two to a ship). On this first combat screen you maneuver your ships, one at a time, through an obstacle course of mines and automatically firing torpedos.

The next screen shows the same overhead view as screen #1, and again you maneuver your fleet, this time past "the point" to combat the enemy fleet. Now your fleet is attacked by enemy planes, each carrying two bombs. Each bomb dropped adds to the damage of one your ships, and after sufficient hits you lose another of your fleet. In this phase you control your anti-aircraft battery, trying to shoot down the enemy planes (which look like Stukas) before they release their bombs. After a number of enemy planes have been shot down (you can, for extra points, shoot at occasional "spotter" planes, also), you advance to the next screen.

On the third combat screen you close on the enemy fleet and exchange naval gunfire, adjusting your range with the aid of a window that tells you how many yards short or long your shot falls, with the angle of fire shown in half degrees. Each half degree adjusts to 100 yards, so with quick calculation you might fire only one shot for range. There are four enemy ships that fire at you, and an aircraft carrier, that if sunk, is worth an additional 10,000

points. Once the enemy fleet is sunk you are returned to the overhead view to maneuver your fleet to the beaches. If you have more than five ships left you receive bonus points.

Now the assault on the pillbox is near. Each of your tanks must individually move through a maze of tank obstacles, including mines, walls, tank pits, streams (with bridges), a variety of "regular" pillboxes (which shoot at you), and some enemy tanks (which move and fire). You receive points for enemy pillboxes and tanks destroyed. This "screen" is actually about four screens long and scrolls. The graphics on this phase are particularly good. If your tank survives this phase and makes it across the last bridge, you attack the final pillbox.

On the last screen you control only the cannon on your tank and must hit each of the ten portholes in order, as each porthole flashes white when it can be hit. This is done in a semi-random manner. You must hurry during this phase as the enemy pillbox is surmounted by its own cannon, which never misses once it zeros in on your tank. My best during this phase is four portholes out of the ten. Once your tank has been eliminated it's back to the beach for the next of your (maximum of) ten tanks to take on the obstacle course (which gets more difficult as to enemy tanks, and differently placed regular pillboxes, after each attack on the final pillbox). If you should succeed in getting enough tanks through and hitting all ten of the portholes, the final pillbox is destroyed and the cannon surmounting same splits and falls and a white flag can be seen waving where the cannon was.

The sound effects are reasonably good throughout, matching well with the combat screen you are playing. The graphics are quite good also. Overall this is a fine game and the only one I've had the privilege of seeing with so many different combat routines. I would have enjoyed being able to start on any screen, as if it were five games in one that could be separated, but this feature wasn't included. Beach-Head sells for about \$40.00 retail, but can be obtained for less than \$25.00 through mail-order discount houses. Personally I don't think it merits the retail price (although I purchased my copy retail), but it is a good play and worth the discount price.

TIGERS IN THE SNOW:

The Battle of the Bulge
SSI

Reviewed by C. M. Hostetler

As far as I am aware this was the first "Bulge" game for Atari computers. It resembles what I would do if I were designing my first computer war game and hadn't seen more "state of the art" games. First, it's in BASIC. Second, it uses a color map, with reasonably good graphics, and it uses hexagonal moving of units, without superimposing the grid visibly on the map. Third, it uses icons for units with unit information accessible through cursor placement and pushing the "fire" button on a joystick. I daydreamed about this last effect and watching the icons representing Panzer Lehr overrunning the exhausted 28th infantry. Sounds great, huh? Unfortunately, the translation of all this from daydream to reality displays all the flaws in my thinking. Understand, this game was copywrited in 1981. That's four years in the fastest crowd around, folks, and in '81 this may have been THE simulation of what I've always thought THE best subject for a war game.

All the important major units are here, including the 150th Panzer Brigade. Unfortunately, details such as the fact that the 150th was made up of captured Allied tanks and equipment are ignored, with the result that the 150th acts like any other tank unit. Don't get me wrong; you CAN play the Battle of the Bulge on this system. It's just that watching those nondescript icons isn't exactly thrilling.

The combat system leaves a bit to be desired, also. Rather than allow the player as commander to plot attacks (and movement) in the order of the player's choice, the computer flashes the icon you can now command and with a series of keys you direct the unit. This system does work, but it is cumbersome and slow in BASIC.

The game does have one feature that is different. You can call up a "Strategic Map" that shows the entire field of play (about four

screens) showing the locations of all the units on the map. Also, this game will play itself, with the computer taking both sides. This is interesting the first time you watch, but quickly ceases to be entertaining.

The game utilizes one of my least favorite combat options, which is to allow each combat to be selected by "tactics". Your choices for attack are major, medium, light, and recon; for defence they are counter-attack, hold position, withdrawal, and delaying action. This type of system has always seemed to me like unneeded chrome on a '57 Chevy. After all, you really don't get a tactical "feel" for the battle(s) through this technique. That comes from actions like allocation of artillery, supplies, overwatch advances vs. "hell bent for leather" mobile operations, etc. In short, tactical feel comes from platoon level commands, actions just not available to a game on divisional scale, particularly not to a game in BASIC.

The game does have air support, weather, special effects of German fuel shortages, and artillery allocations. Each side's difficulty rating is chosen through ratings of 1 to 9. You can save your game after each turn, but this is only available after all 19 phases are completed for the turn. For 1981 this was undoubtably great, and I would have been proud to have a part in it. For 1985, if I had designed it I don't think I could find a market for it. My advice to the potential buyer is to spend your money for a different simulation (SSI's own "Breakthrough in the Ardennes", though more expensive initially, will undoubtedly last longer in your software library).

PLEASE NOTE:

When you call a manufacturer or retailer about a product you have seen advertised in our Journal, please tell them so. This will help us to continue to bring you the latest information on software and hardware that will make your Atari computer an even more valuable investment to you in the future.

- Advertising Dept. -

A SPECIAL OFFER
TO YOUR USER GROUP
FROM *ASTRA

\$375.00

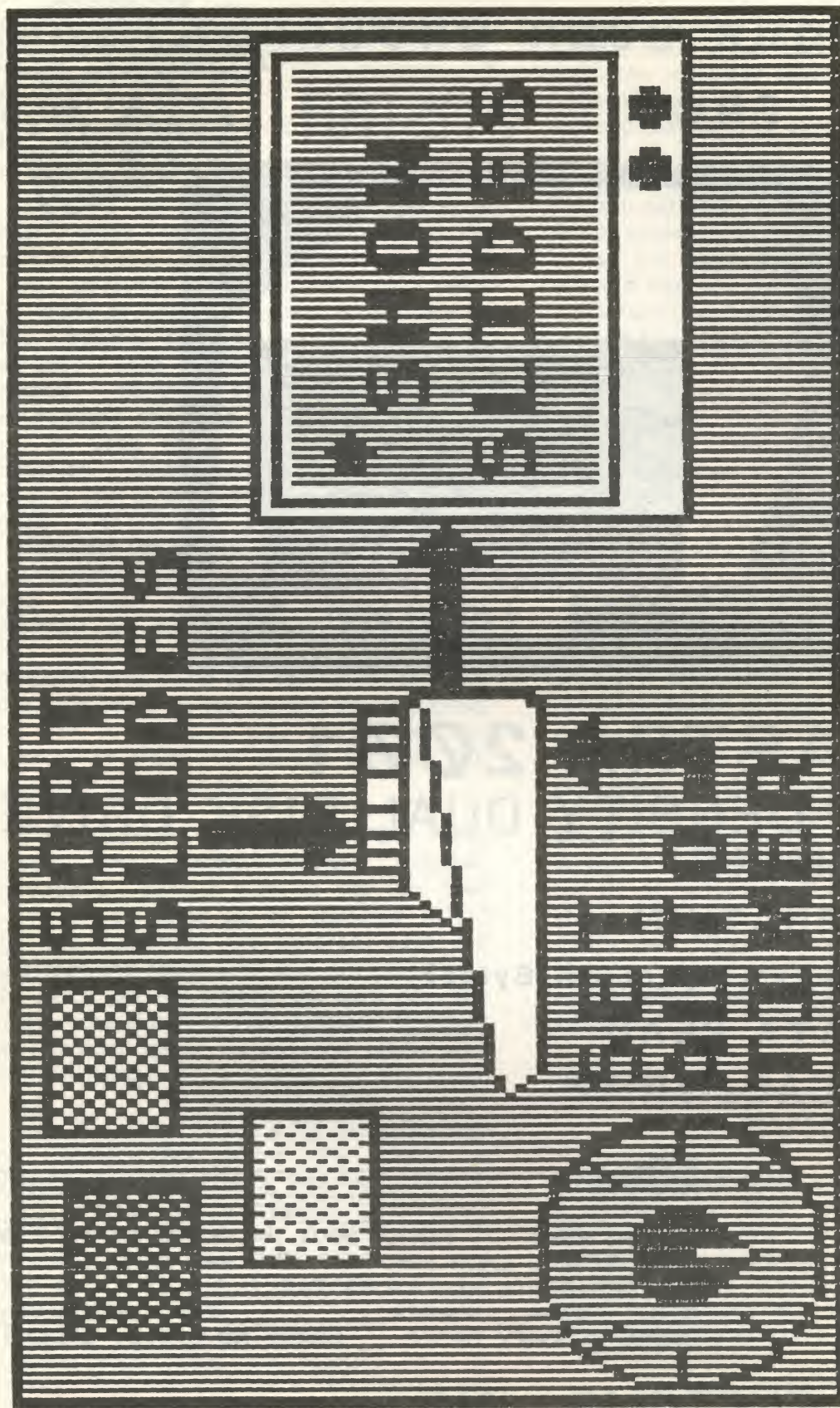


ASTRA 2001
DOUBLE DENSITY DUAL DISK DRIVE
MORE RELIABLE
QUIET OPERATION
MORE CAPACITY (360 K Bytes)
EASIER DATA READ
FASTER READ/WRITE
DIRECT DRIVE

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PLEASE SEND ___ ASTRA 2001 DRIVES @ \$375.00 EACH
PLUS \$10.00 EACH FOR SHIPPING AND HANDLING
CA. RESIDENTS ADD SALES TAX
M.C. ___ VISA ___ NUMBER _____ EXP. DATE _____
CHECK ___ MONEY ORDER ___ SORRY NO C.O.D. ORDERS

***ASTRA SYSTEMS, INC.**

2500 S. FAIRVIEW, UNIT L • SANTA ANA, CALIFORNIA 92704 (714)549-2141



A VISUALIZER show is easy to present.
Just sort your slides as you load the
projector. Then set the automatic
timer to display your creations.

VISUALIZER

by Tim Kilby
Maximus, Inc.

Reviewed by Ann McBain Ezzell

Tim Kilby's Visualizer is billed as a "graphics management system and electronic slide creator/projector". It is all that and more. You can easily create your own animated Graphics 7 designs (including captions), save the "slides" to disk, then sort and show them with or without an accompanying audio tape. Slides can be printed in normal or inverse format on Epson or C. Itoh type printers. There is even a Visualizer Jigsaw Game, which scrambles your slide and challenges you to restore it.

Visualizer requires at least 48K RAM, one or more disk drives, and a joystick. The package includes a double-sided disk with the programs and some sample slides, plus a cassette tape containing a narration for the sample slide show. This cassette can be used either with the Atari 410/1010 recorder or a regular cassette player. There is also an excellent 40-page instruction manual. Furthermore, Maximus offers a toll-free Consumer Hotline (1-800-368-2152). When I called with a couple of questions, they answered promptly and courteously. The person I needed to speak with was away from her desk, but she returned my call within 20 minutes and answered all of my questions. Maximus deserves a gold star for their commitment to customer support.

They also deserve a gold star for this program, which runs with professional smoothness and ease. The manual provides clear descriptions of the operation of Visualizer, starting with the suggestion that you first run the sample slide show (stored on side B of the disk). Playing the narration tape on an Atari Program Recorder provides automatic synchronization of the slides with the tape. You can advance the slides manually if you are playing the tape in a regular cassette player. You can also choose to view the slides without narration; the program advances them automatically.

The sample show introduces the user to Visualizer and its many capabilities. Visualizer actually consists of three programs: Create Slides, Show Slides and Print-Out Slides. Create Slides is a full-featured graphics editor which lets you draw lines of various widths in up to four colors (user selectable) and fill areas from a color palette of 10 colors and textures. You control the cursor with a joystick, with fine control provided by the arrow keys. Routines are included that will draw a border, circles, ovals, rectangles and diagonal lines. The editor includes an erase option for single colors or the entire screen and the ability to shift the image up, down, left or right.

One of the best features is the ability to overlay a variety of text styles in the graphics window. Characters can be printed in 2 heights, 2 widths, italicized or normal, and 3 patterns: solid, striped or shadowed. In addition, you can load in different character sets (three are included on the Visualizer disk) and combine them on the same screen. Up to 4 lines of regular text can also be printed in the caption window at the bottom of the graphics window.

For special effects, Visualizer lets you animate your slides. Six options are available: One-Color Switching, Two-Color Switching, Three-Color Switching, Marquee, Sparkle and Rainbow. With careful planning, you can simulate movement in your slides, or simply draw attention to an important item.

Once you have created a slide to your satisfaction, you can save it to a formatted disk (Atari DOS compatible). Animation will be included if in effect at the time the slide is saved. A Utilities option lets you check the disk directory, rename or delete slides, or format a disk. The Create Slides program also lets you load in previously saved slides for viewing or editing, or you can merge a saved slide with the one currently in memory. The new slide will overlay the current one, so you can use this option to add a frequently used image (such as a logo) to your slides.

When all of your slides are complete, you are ready for the Show Slides option. You can sort the slides on a storage disk and view them

immediately, or save them as a presorted file for later showing. Only one presorted file can exist on a storage disk.

There is an automatic timer which can be set to advance the slides at a chosen interval, or you can synchronize the show for use with prerecorded cassette tapes played through an Atari Program Recorder. Tapes can be prepared with or without a separate voice track. Preparing a tape with simultaneous narration requires special user-supplied equipment. You can purchase the Visualizer Audio Option from Maximus for \$19.95 plus \$2 shipping and handling, or follow the directions given in the manual for making your own cable to connect your cassette recorder to a serial port on your Atari.

During the slide show, several options are available. You can manually advance to the next slide, hold a slide on the screen, reverse the direction of the advance, or return to the main menu. You can also activate a joystick-controlled flashing arrow pointer.

With the proper printer, you can make hardcopy prints of your creations. The Visualizer Print-Out Slides option supports two types of printers: Epson and C. Itoh work-alikes. The dump utility worked just fine on my Gemini-10 printer, producing the illustration printed with this review. The manual notes that the C. Itoh printer dump prints a third-page horizontal image, while the Epson dump produces a full-page vertical dump.

The final program in the Visualizer package is the Jigsaw Game. Once you load a slide, it is divided into 25 pieces which are arranged randomly on the screen. Using the joystick, you mark two puzzle pieces to be switched. A scoreboard at the bottom of the screen keeps track of the elapsed time, number of correctly placed boxes, difficulty level, high score, bonus points awarded for a win (based on difficulty level), and current score. Difficulty levels range from 1 to 10 and are determined as the puzzle is loaded in (perhaps based on the complexity of the puzzle?). You can press the <SELECT> key for a peek at the completed puzzle, but doing so speeds up the clock, thereby decreasing your score. The <OPTION> key lets you quit or load another picture. This

game is fun to play and can be surprisingly challenging.

In addition to detailed instructions for the use of each of the Visualizer programs, the instruction manual includes creative ideas for better slides and suggestions for parents who want to work with their children and Visualizer. There is even a brief BASIC program listing to allow incorporation of Visualizer slides into your own programs (animation is only available through machine language routines).

I only have one question for Maximus: why wasn't Visualizer written to draw in Graphics "7+" (Gr. 15 for XL owners)? Users of Visualizer could then use the thousands of picture files created with MicroIllustrator (Atari Touch Tablet and KoalaPad). Visualizer's graphics editor is fine for a joystick-driven program, but it can't quite compete with graphics tablet drawing programs. I suspect that I know the answer to my question: Graphics "7+" requires nearly twice the RAM of a Graphics 7 display. Visualizer already requires 48K of memory with each program loaded individually from the disk; going to a higher resolution display might just take up too much space.

Even without being compatible with MicroIllustrator files, Visualizer is one powerful graphics package. It would be a good investment for anyone who wants to prepare eye-catching presentations using the Atari's wonderful graphics capabilities. Store owners could set up displays to inform and entertain their customers. Students could use it to make illustrations for school reports, and users of all ages will enjoy the Jigsaw Game.

Visualizer lists for \$49.95 and can be ordered directly from:

Maximus, Inc.
6723 Whittier Avenue
McLean, VA 22101

(add \$2 for shipping and handling)

Maximus Consumer Hotline:

1-800-368-2152



520 ST VS AMIGA



WHAT ARE THE IMPLICATIONS FOR

- SOFTWARE
- SERVICE
- CUSTOMER SUPPORT
- AVAILABILITY
- VALUE

WE'LL DO OUR BEST TO HAVE SOUND
ANSWERS TO THESE QUESTIONS

THE FAMILY COMPUTER CENTER

YOUR ATARI CONNECTION FOR ALL YOUR COMPUTER NEEDS
12 MILE ROAD EAST OF GREENFIELD
BERKLEY, MICHIGAN * (313) 543-0520

MICHIGAN ATARI COMPUTER ENTHUSIASTS CONSTITUTION

Adopted September 15, 1981. Amended on May 17, 1984 and July 16, 1985.

** PURPOSE OF ORGANIZATION **

It shall be the purpose of the Michigan Atari Computer Enthusiasts (hereafter called MACE, or the Club) to promote an interchange of ideas and information concerning the Atari personal computers. MACE shall be organized as a non-profit Michigan corporation.

A. Membership and Dues

There shall be no requirements for membership in MACE other than an active interest in Atari computers.

The Club, by majority vote of the general membership, may levy upon the entire membership such dues or assessments as shall be deemed necessary for the conduct of the Club's business. Every member must pay these assessments when due, in order to retain all of the rights and privileges of membership in MACE.

B. Organization and Procedure

Sec. 1 The Executive Board (Board or EB) shall be the chief administrative body of MACE.

a. Voting members shall be:

1. President
2. Vice President
3. Corresponding Secretary
4. Recording Secretary
5. Treasurer
6. Publications Director
7. Program Director
8. Software Librarians
9. Membership Chairman

b. Members ex officio shall be:

1. The chairperson of any committee
2. Members of the previous year's Board

c. Each voting member of the Board shall

have one vote. The Executive Board shall determine its own rules of procedure, and elect its own chairperson.

Sec. 2 The Executive Board shall organize, plan and administer club activities. The Board shall carry out the business of the club between general membership meetings, its decisions being subject to tacit approval of the general membership.

Sec. 3 The President and/or Treasurer may authorize expenditures of club money up to \$50 per month. The Executive Board as a whole may authorize expenditures of up to \$100 per month. Any expenditures of club funds above \$100 in any month must be authorized by the majority vote of the general membership. *

Sec. 4 The Club, by majority vote at any general membership meeting, may establish provisional or standing committees to expedite the management of Club activities. Each committee shall determine its own rules of procedure and membership, govern its own affairs and activities, and elect a chairperson and other officials as deemed necessary.

Sec. 5 All proceedings not covered in this constitution or bylaws shall be governed by the latest edition of Roberts Rules of Order. The Executive Board shall determine all questions of constitutionality arising within the club, and interpret all unclear clauses of this constitution, bylaws, and all club resolutions.

C. Election of Officers

Sec. 1 The elected officers of MACE shall be:

1. President
2. Vice-President
3. Corresponding Secretary
4. Recording Secretary
5. Treasurer
6. Publications Director
7. Program Director
8. Disk Librarian
9. Cassette Librarian
10. Membership Chairman

Sec. 2 Officers shall be elected for a term of one year by ballot of the members present at

the general membership for the month of September, provided there is a quorum. For purposes of these elections, a quorum will be constituted by no less than 40% of the general membership.

Committee elections will be held at the last committee meeting held in the month of September.

Sec. 3 Nominations shall be open to all members. In all elections, winners shall be determined by simple majority. If there is no winner on the first ballot, the name of the candidate with the least number of votes shall be withdrawn, and a second ballot taken. This process shall be repeated until one candidate achieves a simple majority of the vote.

Vacancies occurring between elections must be filled by special election to be held at the first meeting following the creation of the vacancy. **

D. Duties of Officers

Sec. 1 The President shall preside at all general membership meetings, and conduct them according to the rules adopted. The president shall enforce observance of the Constitution and Bylaws, and perform the customary duties of the office, as stated in the latest edition of Roberts Rules of Order.

Sec. 2 The Vice President shall assume the duties of the President in the absence of the latter, and shall be an ex-officio member of all committees and coordinate inter-committee activities. In addition, the Vice-President shall function as Advertising Manager of the Newsletter.

Sec. 3 The Corresponding Secretary is responsible for the conducting of business of the club via the mails. He/She shall carry on all club correspondence, and be responsible for the preparation of documents on the club's behalf. He/She shall function as chief communications officer, and shall be responsible for the gathering and dissemination of information of interest to the general membership.

Sec. 4 The Recording Secretary shall keep a record of the proceedings of the club. His/Her minutes shall be submitted to the membership for approval at each succeeding general meeting.

Sec. 5 The Treasurer shall carry out the club's financial funds, and keep an accurate account of each transaction, and of the club's current financial status, as well as assisting in the process of corporate financial reporting.

Sec. 6 The Publications Director shall be responsible for the production of the monthly newsletter, and any other club publication. (The Vice-President shall act as Advertising Manager for the newsletter.)

Sec. 7 The Program Director shall have the responsibility for seeing to it that a suitable meeting place is available for the general membership meetings, and for planning and organizing the programs of those meetings.

Sec. 8 The Software Librarian(s) shall be responsible for maintaining the software libraries and related documentation, as well as copying and distributing library disks and tapes.

E. Amendment of Constitution

This constitution may be amended by a vote of 2/3 of the members at a general membership meeting at which there is a quorum of 51% of the members in attendance.

F. Unmentioned Powers

All powers, privileges, rights and duties not otherwise delegated by this Constitution shall be reserved for the general membership of this club.

[Some notes - Only the unrevised constitution has appeared in the Mace Journal in the past. Amendments and revisions made since the club's formation have not been incorporated in past publication of the document. Thanks go out to past secretaries Sheldon Leemon, Mike Lechkun, and Bill Black for maintaining the

only extant notes of amendments to this document. The following sections we think were altered in the ways mentioned:

* These amounts were changed at one point in time due to the high costs of printing the Journal, purchasing disks for the library, and paying for rental of facilities.

** The definition of quorum, or adjustment of who can or is required to vote should be attended to as soon as possible. Our last couple sets of officers could very well have held office in violation of the Constitution.]

ADVERTISING RATES

By Mike Mitchell

For those of you who do not know me, I am the SYSOP of THE Baudville BBS. I have been a MACE member for about two years and recently became the Advertising Manager for the MACE Journal. In September I plan to run for an officer's position so that I may continue to take care of the advertising needs of the Journal. The following is to acquaint you with our advertising policies and the different options that are open to you.

First we have the MACE Unclassifieds which are free to the general membership. These noncommercial ads are available to MACE members who wish to sell, buy or trade computer related items. You can place an Unclassified ad by informing the Editor at least two weeks before the meeting.

We also offer extremely good rates on commercial advertising. Copy should be camera-ready and be given to the Advertising Manager (or Editor) at least two weeks before the meeting. Space is available on a first come, first served basis, so if you want the back cover, reserve it early. Rates for commercial ads are as follows:

Full page (inside) - \$50.00
 Half page (back cover) - \$50.00
 Half page (inside) - \$30.00
 Quarter page (inside) - \$20.00
 Eighth page (inside) - \$10.00

Copy for a full page ad should measure approximately 7 1/4" x 10" (not counting borders). A half page can be 7 1/4" x 5" for horizontal format or 3 1/4" x 10" for vertical format. A quarter page is 3 1/4" x 4 3/4" and an eighth page is 3 1/4" x 2 1/4". If you use a printer to prepare your copy, please use a dark ribbon.

Two special membership categories are available for regular advertisers. At a cost of \$100.00 per year, Contributing Members can receive 10 copies of each MACE Journal, purchase advertising at 10% off regular prices and buy table space at meetings for \$25.00 per table. For \$500.00 a year, Sustaining Members are entitled to 10 copies of each MACE Journal, 12 free full page ads in the MACE Journal and table space at membership meetings for \$10.00 per table.

If you would like to place an advertisement or if you have any questions, please feel free to call me at (313) 425-4367 after 6:00 pm.

PARTS/SERVICE FOR ATARI* COMPUTERS

FLAT SERVICE RATES BELOW INCLUDE
 PARTS AND LABOR, 60-DAY WARRANTY

800 Computer Repair	\$65.00	810 Disk Drive Repair	\$79.50
400 Computer Repair	\$47.50	800XL Computer Repair	\$67.50
600XL Computer Repair	\$65.00	850 Interface Repair	\$60.00
1200XL Computer Repair	\$65.00	1050 Disk Drive Repair	\$85.00

Above units repaired or exchanged with rebuildable exchange. Include \$7.00 return shipping and insurance.

INTEGRATED CIRCUITS

GTIA Chip C014805	
upgrade with instructions	\$11.50
10K Rev B OS Upgrade for 400/800	
3-Chip ROM set with instructions	\$12.50
Pokey Chip C012294	\$8.50
Antic Chip C012296	\$10.50
PIA Chip C014795	\$11.00
Basic ROM set	\$15.00
CPU Chip C014806	\$12.50

REPLACEMENT/BACKUP BOARD SETS.

800 OK	\$69.50
800 48K	\$122.50
400 OK	\$52.50
810 Board Set	\$99.50

All Boards complete with ICs, etc. Keyboards not included.

MODULES/CIRCUIT BOARDS...complete with IC's

16K RAM Memory Module CX853	\$18.50
800 10K Rev B OS Module	\$18.50
800/400 CPU Board with GTIA	\$22.50
800 Main Board	\$28.50
400 Main Board	\$26.50
400 Main Board w/o ICs	\$8.50
800 Power Supply Board	\$10.50
810 Data Separator Board upgrade with instructions	\$25.00
810 Side Board w/o Sep. & 1771	\$43.50
810 Rear Power Board	\$25.00
810 Analog Board	\$16.00

MISC.

810 Rear Board/Analog Board Upgrade with 10-pin jumper and instructions	\$39.50
Editor Assembler	\$25.00
BASIC Cartridge w/o Case, Manual	\$23.50
810 Custom Disc Drive	\$149.50
400 Computer Complete	\$39.50
Replacement 810 Drive Mech.	\$75.00
Replacement Power Transformer	\$16.50
800XL/600XL Power Supply	\$35.00
SAMS Service Manual for 800 or 400	\$19.95 ea.
800 Keyboard Repair	\$35.00
850 Interface	\$135.00
De Re Atari	\$12.50

AMERICAN TV 415-352-3787

Mail Order and Repair 15338 Inverness St., San Leandro, CA 94579
 Retail Store 1988 Washington Avenue, San Leandro, CA 94577

Terms: We accept money orders, personal checks or C.O.D.s VISA, MasterCard okay on orders over \$25.00. No personal checks on C.O.D.

Shipping: \$4.00 shipping and handling on orders under \$150.00. Add \$2.00 for C.O.D. orders. California residents include 6 1/2% sales tax. Overseas shipping extra.


Prices subject to change without notice. We reserve the right to limit quantities. Sales limited to stock on hand.

Foreign shipping extra.

Much more! Send SASE for free price list.

Repair/upgrade services available Call. *Atari is a registered trademark of Atari Corp.

SY DRAFT
OFFICE, ART & DRAFTING SUPPLIES



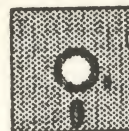
LINCOLN CENTER
26130 Greenfield
Oak Park, MI 48237
Phone
(313) 968-2620

DRAFT

YOUR WORD PROCESSING CENTER

DISK PUNCH	\$ 5.00
DOUBLE-UP DISK PUNCH	\$ 8.95
INDUS GT DRIVE	\$220.00
ATARI PRINT SHOP	\$ 30.00
ATARI GRAPHICS LIBRARY	\$ 19.00

SSDD DISKS: 10 for \$ 6.98
100 for \$ 65.00
1000 for \$600.00



***** WHILE THEY LAST! *****
MPP 1000E MODEM \$ 96.00
MPP MICRO STUFFER \$103.00
***** ** ** **** ** ** *****
PAPERCLIP \$ 40.00
COMPUERVE STARTER KIT \$ 20.00
BMC PRINTER BX80 \$185.00
SCM D100 PRINTER \$190.00
PANASONIC 1091 PRINTER \$279.00
DATA CASE (HOLDS 50) \$ 8.50
MEDIA MATE (HOLDS 50) \$ 9.50
DISK CASE (100 W/LOCK) \$ 13.00

SPECIAL PRICES FOR MACE MEMBERS

CALL US BEFORE YOU BUY

WE HAVE HARD-TO-FIND ITEMS LIKE:
PRINT SHOP COLORED PAPER AND ENVELOPES, COLORED RIBBONS
**** SOFTWARE IS ALWAYS 30% OFF ****

U.S. DOUBLER
ICD, Inc.

Reviewed by Mike Mitchell

If you're like me and a lot of other people who bought the Atari 1050 disk drive and now wish you had double density, have I got some great news for you. You can turn that 1050 into TRUE Double Density. The U.S. Doubler from ICD, Inc. consists of two IC chips and SpartaDOS. You install the chips into the drive, which is a very easy operation. It took me about 25 minutes the very first time.

The first thing you will notice is that the response time of the drive is cut by 50% or more. When you turn on the drive it is up to speed and the busy light is off in about 3 seconds. The standard read/write time is about 10% faster. This kit also comes with SpartaDOS, a CP/M style DOS. Unfortunately, DOS 2.0 or 2.5 files are not compatible, but SpartaDOS has a program called SPCOPY which will convert DOS 2.0 to SpartaDOS or vice versa. The best feature of all, other than true

double density, is UltraSpeed I/O. This option will increase the read/write speed by four times the standard speed, but will only work with SpartaDOS.

I bought my first kit directly from ICD about six months ago and found a bug in the operation of the chips. They would not read the outlying sectors of a disk in double density. The chips were labeled Revision 'H'. I called ICD and was told that Revision 'L' would correct this problem. Everything now works as promised in all three formats (single, dual and double density).

The best place to purchase this kit other than ICD is from Sector One International for \$59.00. This is Revision 'L' which now comes with the SpartaDOS Construction Set for both the Atari 800 and the XL/XE machines. I have four of these kits; two are in the 1050 disk drives I use to run the Baudville BBS. I have had no problems whatsoever with Revision 'L'. Considering the performance of this kit, your money will be well spent. If you have any questions you may contact me by calling the Baudville BBS at (313) 525-5172.

JACK TRAMIEL INTERVIEW

By Jeffrey J. Williams

Atari asked the Chicagoland Atari User Group (C.L.A.U.G.) to help assist them with their exhibit at the Summer Consumer Electronics Show in Chicago. As one of the volunteers participating in the show, I asked Jack Tramiel for an interview that would appear in the newsletters of the various user groups I belong to (as well as any other groups that pick it up and choose to print it). He was most eager to talk to Atari users so he made time in a very busy day to talk with me. During the interview, I was somewhat nervous and sometimes had trouble following my notes, but Jack was very cordial and tried hard to put me at ease. We talked about CES, the ST series, the CD (compact disk) ROM device shown at CES, and Atari's relationship with user groups.

JJW: Atari announced that they would not be attending Summer CES. What prompted you to change your mind?

Tramiel: The CES show, the way we had to display it was too expensive to bring our booth, to refurbish the booth. It would have cost about \$500,000 and I felt it wasn't worth it to spend that kind of money, that I could attract the people to come to a suite in Chicago during that time and to pay much less. When we were offered the present space, we took it because it cost much less. It was strictly economics. We are here to produce computers for the best price, for the best value, not to show off.

JJW: At this show, you are displaying not only the 520ST package, but also a 260STD with 256K RAM, operating system on ROM, and a built-in 3.5" disk drive. What prompted you to include the 260STD in your planned product line?

Tramiel: We feel that there are different buyers in this marketplace... people who like to buy from K-Mart and people who like to buy from specialty stores, so we went ahead and designed two different kind of machines.

There is the total system like the 520 which will be sold to specialty stores and a system like the 260 where the mass merchandiser, if he wants to, can buy it. It was strictly to be able to produce the volume and to satisfy our customers.

JJW: The 520ST will initially have its operating system loaded from disk into RAM. Do you hope to put it on ROM at some future point?

Tramiel: The 520 will be on disk only. (NOTE: Atari has since announced that the Operating System WILL be available on ROM for the 520ST. Anyone purchasing the 520ST prior to the ROM availability will receive the Operating System on ROM. -JJW) We will definitely have new machines constantly. Our aim is to continuously improve the product line. We intend to show at Comdex this year an even higher graphic machine.

JJW: Would that be the 32-bit machine?

Tramiel: No. We intend to keep the ST as the basic machine. What we will do is we intend to have an expansion box. In that expansion box we intend to put quite a few boards. One of those boards will be a 32-bit board. Not a machine, but just a board. It will turn the ST, which you own today, into a 32-bit machine if you want to.

JJW: That is exciting. Do you have any problems with me publishing this?

Tramiel: No, go ahead... if I did I wouldn't have told you. You are the first one to be hearing this because to me, people like yourself being part of a club, you are my boss. You are the end user. You are the people that I am working to produce a product for.

JJW: Speaking collectively for other users, we appreciate it. (NOTE: I subsequently asked Leonard Tramiel what processor will be mounted on the board. He said Atari is not ready to announce that information). You are showing an early prototype of CD ROM here that seems to be generating quite a bit of interest and excitement amongst the people who have seen it. Earlier today I was walking around the CES looking at other displays and

it seemed I could always hear "Atari" wherever I went. I couldn't key in on exactly what they were all saying, but that word always catches my ear. You currently have a 20-volume encyclopedia stored on a 5" compact disk and the retrieval rate is astounding. What other applications do you see for the CD ROM?

Tramiel: There are many. They can be used for a law library of any state of the United States. You could have the whole Library of Congress with every book that's been published in the last 200 years. A lot of hospital information which is all public information for doctors. Instead of having to go into a data base in Minneapolis, he can have it right on his desk. There are hundreds and hundreds of public domain applications that could be put on that ROM.

JJW: So you see it for use initially perhaps as a professional reference device as well as an institutional reference device like for schools and colleges.

Tramiel: Exactly. And I am hoping that this is one service that we can sell to remote areas in other countries where people could have a whole library, like 42nd Street and Fifth Avenue.

JJW: It really brings to the present the concept of sitting down at a computer and being able to call up a wealth of information, something I thought was still years away.

Tramiel: Exactly. That's the whole idea, we are trying to bring it forward. I am trying to take away the "black box" image, that it is "not available"... it IS available.

JJW: Tell me about peripherals for the eight-bit line.

Tramiel: We will be expanding our drive capacity. We will have a 3.5" disk drive with a half-megabyte and one megabyte in the future. We have a number of different printers, including a daisy wheel printer. The whole idea as far as the eight-bit line is concerned is to keep that product alive and expand it. As far as beginners, as far as education, as far as people who don't have much money, the

eight-bit line is a fantastic product. We will continue producing it and expanding it. I'm hoping in 1986 or even the end of this year to have a 256K eight-bit machine with a built-in drive.

JJW: 5 1/4"?

Tramiel: No, 3.5". We want to keep all those products alive and build on the software.

JJW: Perhaps you've just done it for me, but could you describe your vision of the ideal Atari personal computer. If you could just point at the table and it would be there, what would it be like?

Tramiel: It would not be on the table. My ideal Atari computer of the future is to have a television with a remote keyboard to be your computer.

JJW: I've respected your work both at Commodore and especially now with Atari. I've read the book "The Home Computer Wars" which I took to be the Jack Tramiel success story, rather than being the Commodore story or the Michael Tomczyk story. I got out of it a greater admiration and respect for you. Have you read it and what do you think about it?

Tramiel: I did read part of it because he is an associate and a friend of mine. He asked me to read it and give him comments beforehand. I did not want to give him any comments and I did not give him any comments. It's the way he interpreted the way I have operated and there are many paragraphs that are not correct, but that's the way people write.

JJW: Would you say he captured the flavor of Jack Tramiel?

Tramiel: I would say about 80% he did.

JJW: Could you run down the expected availability dates and prices for the current planned line of Atari products?

Tramiel: The 520ST system (512K RAM, half-megabyte 3.5" disk drive, & high resolution monochrome monitor) will be sold in July retails for \$799. The 260ST will be available in October or end of September and

we'll have 2 machines...one will be \$395 without the drive and \$495 with the drive.

JJW: What about the other monitors that will be available for the ST's?

Tramiel: In case you would like to have a color monitor, for \$200 more you will be able to get the color monitor instead of the monochrome. So for the black & white, it is \$799, with the medium-res color monitor it is \$999.

JJW: And the color monitors will be available in July also?

Tramiel: Yes.

JJW: James Copeland (Vice President of Marketing) in a staff meeting I attended the day before the opening of CES, said that Atari has some plans and directions that Atari would like us, the user groups, to take with Atari distributors and mass merchants for which Atari is prepared to help support those user groups. Could you elaborate on those plans and what kind of support is planned for cooperative user groups?

Tramiel: I really am not familiar with what exactly he said. I believe very much in sex. When I mean sex I mean for people to be involved... that's what I call sex. When I have a question to ask, "Is this machine good?", "Do people like it?", I like to go directly to the users and ask them those questions. Like I am trying to offer you the 520ST first... to find out what is going on. If a retailer needs help, we don't want to go out and hire some models, but to find a way how to give this money to your club so that you can really help each other and at the same time to try to help that retailer to sell the product. And as you know who he is selling to, you will get that many more members and we will pay you for that effort so you can use that money for improving your club. That is what I was trying to tell Jamie (James Copeland) and now he is trying to go forward on it.

JJW: I was asking David (David Duberman, Atari's User Group Coordinator) about the same thing. He said that the plans are not really defined just yet.

Tramiel: I am giving you what the aim is. The aim is that you people in the next 2 or 3 years, with the computers coming out, can help the people that do not know computing by bringing them to the users groups.

JJW: I agree. I was in a store about a month ago where a man just bought an 800XL, 1027, 1050, AtariWriter, etc. While the sale was being written up, I introduced myself and asked if he knew anyone that could help him with any questions or problems he might have in getting his system up and running. He said no, so I gave him my name and number and told him about a couple of the user groups I belong to and invited him to attend our meetings. I don't want to take up much more of your time, in concluding this interview... do you have a message that you would like to convey to the Atari users that will be reading this interview?

Tramiel: The message I have for them is a very simple one. I appreciate all the patience they have had over the years. Now we are here, we are producing the best products and I hope they will be as proud of us as we are of them.

OCTOBER JOURNAL

Next month's Journal will focus on word processors for the Atari. We plan to publish reviews of PaperClip by Batteries Included, Writer's Tool by OSS, AtariWriter, Text Wizard by DataSoft, and SpeedScript from Compute!

A word about PaperClip: Version 1.0 has a number of bugs in it. You can get Version 1.1, with 14 fixes and changes, from Batteries Included for \$10 and your 1.0 disk. If you don't already have PaperClip, look for Version 1.1 (BI says it's in the stores). Better yet, wait for next month's reviews before you make your choice. PaperClip is powerful (once you get rid of the bugs); AtariWriter is extremely easy to use. I'm still waiting for Writer's Tool, but if it comes close to my expectations (and an OSS product is likely to exceed expectations), it might just be the best of all. Start thinking about what features are important to you, and perhaps next month's Journal will help you make the right decision.

ADRAY APPLIANCE & PHOTO CENTER

SUMMER



ATARI



COMPUTER



SALE!

WICO



MicroProse Software



20219 CARLYLE IN DEARBORN

OPEN DAILY 10 A.M. - 9 P.M. - NEVER ON SUNDAY!
WEST OF SOUTHFIELD AND OUTER DRIVE - NEAR PELHAM
CALL US AT : (313) 274-9500

XL "FIX"

Computer Software Services

Reviewed by Clarence E. Wentzel

Last summer our family encountered a mid-life crisis of sorts. Our son was leaving for college and wanted to take "his" Atari 800 with him. No amount of reasoning, threats, etc. would change his mind, so we decided we would have to buy a new 800XL. My first concern was related to compatibility with several important programs: Visicalc, Data Perfect, Text Wizard, etc. My second concern was logistics. We live in Venezuela and only visit the U.S. during vacation. In order to avoid surprises, I brought my key programs with me when I came up. The 800XL had been ordered and would be waiting when I arrived. Upon testing, I discovered that Data Perfect would not work. The Atari translator disk didn't resolve the problem.

At this point I called Computer Software Services. I had seen their ads and called to ask specifically if Data Perfect would work with their XL "Fix". They said that it would and told me about a new ROM version which was easier to use.

The package arrived three days before I was to leave and was promptly installed. Data Perfect still did not work!!! I immediately called CSS and was advised that the problem was related to a recent design change by Atari. They told me how to make the system work in the interim and advised that a revised ROM would be available in a week. I explained my special problem and we arranged for them to send a revised ROM to my father-in-law who would forward it to me. I would then return the first ROM. The whole process would take 2 to 3 months.

Everything went as planned and my new 800XL works just like the old 800 without having to switch disks, etc. The XL "Fix" is a good product and performs as the ads say, but more importantly the personnel involved are knowledgeable, helpful, and trusting. Without their assistance and support, my computer would have been "down" for several months.

The only two minor problems with the XL "Fix" are: 1) most Electronic Arts programs won't load because their protect scheme searches for Omnimon, and mistakes the XL "Fix" chip for Omnimon and will not load and 2) the XL "Fix" chip has a fast repeat feature which adds to the one in Synchron, making it difficult to type a single letter. In spite of these two problems, I am well satisfied with the product.

GREETINGS FROM YOUR EDITOR...

Here we are with another 36-page Journal! Special thanks are due to Mike Mitchell, who has taken over as Advertising Manager and done a wonderful job of obtaining advertising for us. (He tells me that he already has the back cover sold for next month - how's that for efficiency?) Mike will be running for the office of Vice President next month - if you want to continue reaping the benefits of increased advertising sales, be sure to come to the meeting and vote for him.

If you're looking for my usual Page Zero column, I'm sorry, but there just wasn't room this month. I decided to include Chris Crawford's articles on learning assembly language instead, because I know that a lot of members are interested in that. There will be a total of 7 lessons in the complete course! we hope to be able to bring them all to you in the next few issues.

The cover picture, by the way, was created by Mike Schiffer using Maximus's Visualizer.

SEPTEMBER MEETING

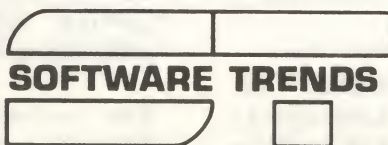
Mark September 17th down on your calendars and be sure to come to the annual MACE elections. Some of this year's officers will be running again, and some new people have indicated that they are interested in holding office, but there's always room for more candidates. You don't have to be a computer whiz to be a MACE officer, just someone committed to Atari and to helping MACE stay the number one user group in the world.

SEE US FOR ALL YOUR COMPUTER NEEDS!

520 ST'S
130 XE'S
PRINTERS
MONITORS
MODEMS
PAPER
RIBBONS
DISKS
SURGE PROTECTORS
FURNITURE

AND, OF COURSE...

ALL THE LATEST ATARI SOFTWARE!!



230 S. MAIN, CLAWSON, MI 48017

MONDAY AND THURSDAY 10 - 8
TUESDAY, WEDNESDAY, FRIDAY AND SATURDAY 10 - 6
(313) 288-3280

ASSEMBLY LANGUAGE COURSE

[The following articles were downloaded from CompuServe by MACE EAST Sysop Mike Lechkun. We hope to be able to bring you the rest of the "course" in future issues -Ed.]

ANTIC PUBLISHING INC., COPYRIGHT 1985.
REPRINTED BY PERMISSION.

CHRIS CRAWFORD
ASSEMBLY LANGUAGE COURSE
FOR WORLDWIDE USERS NETWORK

LECTURE ONE - 5/28/85 WHY LEARN ASSEMBLY LANGUAGE?

Assembly language is the great barrier that divides the professional programmer from the amateur. It is the most powerful language available for a microcomputer.

There are four reasons for learning to program in assembly language. First, the speed of execution of assembly language is very high -- about ten times higher than BASIC on the average, perhaps a thousand times faster on certain operations. Even ACTION!, the fastest high-level language, is only about half as fast as assembly language.

Second, assembly language tends to be more compact than many languages. Again, ACTION! provides a good comparison. Code produced by ACTION! is about twice as large as equivalent assembly language.

The third reason to program in assembly language is that assembly gives you access to features of the machine that simply are not available in high-level languages. Interrupts are the most notable examples.

Finally, the most important reason for learning to program in assembly language is that it will help you to understand the machine better. And that is a very good place to begin, for you cannot learn assembly language unless you know a little bit about computers.

HOW COMPUTERS WORK

I am now going to describe how computers

work, in very rough terms. Computers operate on a hierarchy of concepts that spans a great range, rather like the hierarchy that starts with protons and electrons, moves through atoms, molecules, cells, people to civilizations.

A civilization is composed of protons and electrons, but to understand how it is so composed one must know a great deal about the intermediate steps. So too is a computer composed of transistors. There are four intermediate steps between the transistor and the computer.

A transistor is an electrically operated switch. We can assemble transistors into gates that will turn circuits on or off depending on the states of other circuits. There are a variety of gates reflecting the various Boolean operations: AND, OR, NOT, NAND, NOR and EOR.

Gates can be assembled into latches, decoders, and adders. A latch is the simplest memory element: it remembers one bit of information. A decoder translates a number encoded in binary form on a few wires into a selection of one of many wires. An adder will add two one-bit values, with a carry, and generate a carry of its own.

We can next broaden each of these devices into an eight-bit device by simply slinging the devices side by side. Eight one-bit latches slung side-by-side give one byte of RAM. Eight adders make an eight-bit adder.

We can thus create a RAM module by building many bytes of RAM. We access this RAM module with three buses: a data bus, an address bus, and a control bus. The data bus carries information between the central processing unit and the RAM module.

The address bus is sixteen bits wide; a decoder in the RAM module takes the numeric value on the address bus and decodes it to select the single byte of RAM that is indicated by the address. The control bus establishes the direction of the data flow on the data bus and the timing of data transfer.

The central processing unit (CPU) represents the highest intellectual level of the computer. It is composed of four parts: the Arithmetic and Logic Unit (ALU), the registers, the address bus controller, and the instruction decoder. The ALU is composed of adders and gate arrays that crunch numbers. The particular device to use is selected with a decoder.

The registers are simply on-board RAM. The address bus controller is a device that puts the desired RAM address onto the address bus. The real heart of the CPU is the instruction decoder, a very complex decoder that takes the program instructions out of RAM and translates them into action. It does this by feeding the instructions (which are numbers) into decoder circuits that activate the desired gateways in the CPU.

PROGRAMMING A MICROPROCESSOR

Machine code is nothing more than a bunch of numbers that mean something to the CPU. It's hard to work with pure numbers, so we use a little code that makes it easier for us to understand the codes that the computer uses. This programmer-friendlier code is called assembly language. It is a direct, one-to-one translation of machine code. Here is an example of the two side by side:

Machine Code	Assembly
	Language

A9 05	LDA #FINGERS
133 9C	STA COUNT

The code on the right may not look very readable, but you must agree, it's far more readable than the code on the left. And they both mean exactly the same thing.

Unfortunately, the computer cannot read the assembly code, only the machine code. Therefore, we need a translator program that will translate the easier-to-understand code on the right into the impossible-to-understand code on the left. This translator program is called an assembler.

A program that goes in the reverse direction, translating machine code to assembly, is called disassembler. It may seem like a bother to go through all the hassle of using an assembler, but it is actually much easier.

Assembly language is not only more readable than machine code, but it is also assembly-time relocatable; this means you can move it around in RAM freely before you start the assembly process. A good assembler also offers a number of extra features that make it easier to keep track of your program or modify it quickly.

USING AN ASSEMBLER

There are three steps involved in writing an assembly language program: editing, assembling, and debugging. Editing is the process of typing in your assembly language statements. Assembling is the invocation of the assembler. Debugging is the process of running your program and analyzing why it doesn't work. Thus, the entire process of writing an assembly-language process can be described by a fictitious BASIC program:

```
FOR I= 1 to 1,000,000,000...
EDIT PROGRAM
ASSEMBLE PROGRAM
DEBUG PROGRAM
NEXT I
```

THE 6502 MICROPROCESSOR

The first item in the 6502 that I will describe is the accumulator. This is a single one-byte register in the 6502. It is the central workbench of the microprocessor; almost everything happens in the accumulator. Your first three instructions on the 6502 are:

LDA address (Load the Accumulator with the contents of address)

This instruction loads the accumulator with the contents of the memory location specified by the value of address. The address can be specified by either an outright value, such as \$0600, or a symbolic reference, such as FISH, where the value of FISH has been previously declared by, say, an ORG statement or an equate statement.

LECTURE TWO - 6/24/85
6502 ARITHMETIC

LDA #value (Load the Accumulator with value)

This is much like the earlier statement; it loads the accumulator with a number, only the number loaded is specified immediately rather than stored in a memory location. Thus, the command LDA # 9 will put a 9 into the accumulator.

STA address (Store the Accumulator into address)

This command will store the contents of the accumulator into the RAM location whose address is specified in the command. It is just like the first command, except that the direction of data motion is reversed. The LDA command is like a read, which the STA is like a write.

You are now equipped to move data around inside the computer. These commands will allow you to read data from one area of memory and store it into another. LDA and STA are the two most common instructions used in any 6502 program.

Exercise: Write a program that will read the contents of address \$FE00 and store the result into address \$680. Your biggest problem here will be just getting your assembler to work. Therefore, I will give the answer away:

```
ROMADD ORG $FE00
RAMADD ORG $680
ORG $600
LDA ROMADD
STA RAMADD
BRK
END
```

That's the program. Try to get it running with your assembler.



NUMBER SYSTEMS

In this lecture I will take up the problem of arithmetic on the 6502. I choose this topic only because it is fairly simple to do on the 6502. There are a couple of nerve-jangling problems associated with 6502 arithmetic, but I will breeze over those in a very cavalier fashion.

Before we can do arithmetic, though, you must know a little bit about number systems. There are three that you must know: decimal, binary, and hexadecimal.

Decimal is the standard numbers you have used since grade school. You count 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, and then you reach 0 again, so you put down a 1 in the tens place and resume counting from 0.

Binary works the same way, except that there are only two digits, not ten. The two digits are 0 and 1. You count 0, then 1, then you reach 0 again, so you put down a 1 in the twos place and resume counting from 0. Thus, counting from 0 to ten in binary like this:

Decimal	Binary
0	0
1	1
2	10
3	11
4	100
5	101
6	110
7	111
8	1000
9	1001
10	1010

In binary, instead of having ones, tens, and hundreds places, we have ones, twos, fours and eights places. It takes a lot more digits to express a number in binary, but then again, we have only the two numerals 0 and 1 to work with, so what does one expect?

The hexadecimal number system is a base-16 system. In this system, you count from 0 to 16 like so: 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,10.

The 10 in hexadecimal really means 16 in decimal. So 10 is 16, right? Black is white, truth is lies... stay with assembly language long enough and you'll believe anything.

Actually, it's easy to avoid confusion. We use little prefixes to tell you and the computer whether a number is expressed in decimal, binary, or hexadecimal. No prefix means decimal. A \$ prefix means hexadecimal; a % means binary. Thus %10 means 2 while \$10 means 16, but 10 means just plain old 10. Hexadecimal is not hard to learn at all; if you go into any store you will see that they use hexadecimal on all their signs.

ADDITION AND SUBTRACTION

Addition with the 6502 is very simple; it uses the ADC instruction. This instruction means "Add with Carry"; I'll get to the Carry part in just a moment. For now, let me explain the instruction. The ADC instruction has an operand, normally a location in memory. When the instruction is executed, it takes the contents of that memory location and adds that value to the value in the accumulator.

It leaves the sum of the two numbers in the accumulator. This of course destroys the old value in the accumulator. You can use the immediate mode of addressing with the ADC instruction, in which case it adds the value itself. Thus, "ADC # 9" will add a 9 to the contents of the accumulator, while "ADC FISH" will add the contents of address FISH to the accumulator.

Subtraction is just like addition. The instruction to use is SBC, which means "Subtract Borrowing Carry". Again, I'll tell you about the Carry part in a moment. This instruction subtracts the operand from the contents of the accumulator, leaving the result in the accumulator. It also can be done in either immediate mode (e.g. SBC #5) or absolute mode (e.g., SBC GOAT).

WORD LENGTH PROBLEMS

If that were all there were to arithmetic with the 6502, programmers would be paid a lot less. The first killer problem is that the 6502 uses 8-bit words; that is, the numbers that

the 6502 stores and works with are only 8 bits wide. This means that the biggest number the 6502 can comprehend is 255. Uh-oh! What happens if you want to have a checkbook balancing program and you have more than \$255? What happens if you get more than 255 points in your "Decapitate the Orphans" game? In fact, what happens if you just ignore the limit and add, say, 10 to 250?

Well, believe it or not, the 6502 will give you an answer of 4. Why? The number system that the 6502 uses is like a wheel, with 0 at the top, counting clockwise 1,2,3,... all the way up to 255, which lies right next to the 0. If you go up from 255 you just wrap around past the 0 and start all over. Similarly, if you subtract 2 from 0, you'll get 254.

The solution to all this is provided by the Carry bit, discussion of which I've been putting off until now. The Carry bit is a flag that the 6502 uses to remember when it has done arithmetic that carried it over the boundary between 0 and 255. By using it properly, you can solve your arithmetic problems.

The first trick to using the Carry bit is to use multi-byte words. This means that, instead of using a single byte to store a number, you use several. For example, if you use two bytes to remember a number, you can store a number as large as 65,535. Three bytes lets you go to 16,777,215. Four bytes lets you go to 4,294,967,295. Big enough for you?

To use multi-byte arithmetic, you set up a series of additions or subtractions. Suppose, for example, that you want to add two two-byte words. The program fragment to do this would look like this:

```
LDA  LOFISH
CLC
ADC  LOGOAT
STA  LOANSR
LDA  HIFISH
ADC  HIGOAT
STA  HIANSR
```

This little fragment of code assumes that the first two-byte value is called (LOGOAT, HIGOAT), and that the second is called

LOANSR, HIANSR). The new instruction, CLC, stands for "Clear Carry" and it means that the Carry bit should be set to 0. It should always be used with all additions except chained additions like this one.

The code does the following: first it adds the two low values. If the addition resulted in a wraparound (result greater than 255), then the Carry bit was set; otherwise, it was cleared. Then it performed the second addition, adding in the value of the Carry bit. (That's why we call it "Add with Carry".) Thus, if a wraparound occurred, an additional one was added into the high sum. This system insures that multi-byte addition works properly.

For subtraction, you use the SEC instruction ("Set Carry"). Otherwise, you handle subtraction the same way that you handle addition. In both addition and subtraction, though, the low bytes must be handled first, then the higher bytes in the proper order (lower to higher).

DECIMAL & SIGNED ARITHMETIC

There are two variations on standard 6502 arithmetic. Both are so rarely used that I will not treat them here. The first is decimal arithmetic using the Decimal flag. This allows you to set up an automatic decimal adjust mode. This is useful in certain types of arithmetic, primarily BCD arithmetic. If you don't know what this is, don't bother with the Decimal flag. Your program should always begin with the instruction CLD, which means "Clear Decimal Flag". I will tell you this just once: failure to clear the decimal flag is the source of the most frustrating and impossible-to-trace bug in the 6502. Every single program should start with the instruction CLD.

The second arcane bit of 6502 arithmetic is signed arithmetic. It uses the V flag ("oVerflow"). Signed arithmetic is always confusing and seldom useful. In 7 years of working with the 6502, I have never had need of it. Don't bother.

LIMITATIONS ON 6502 ARITHMETIC

There are quite a few limitations on 6502

arithmetic. There is no facility for multiplication and division; you have to write subroutines to do that. You must design your programs to make do with 8-bit words; failing in that, you must use multi-byte arithmetic, with its consequent price in speed and RAM. All in all, arithmetic is a real pain on the 6502. This is the major reason why most 6502 programs do so little arithmetic.

MEMBERSHIP NEWS

Take a quick look at your mailing label. If the expiration date in the upper right hand corner has been highlighted in yellow, CAUTION - you have only one month more before cancellation. If it has been highlighted in red, BEWARE - the copy you hold will be your last unless you renew, either by mail or at the next meeting. The Membership Chairman would appreciate early renewals. This will cut down on congestion at the membership desk and allow you more time to participate in the meetings. Thanks.



MACE NEW USER FORUM

7:30 P.M. - 9:30 P.M.
Southfield Civic Center
Parks & Recreation
Meeting Room

August 26, 1985
BASIC Menu Program
ATARI Writer

September 23, 1985
How to use MACE
library disks ...
AUTORUN's & their use

October 28, 1985
How to use a BBS
AMODEM / MACE Terminal

INFO : Call Tom Sturza
Between 6-10 P.M.
477-2345

M. A. C. E.
MICHIGAN ATARI COMPUTER ENTHUSIASTS

P.O. Box 2785, Southfield, MI 48037

BULLETIN BOARDS: MACE 978-1685/MACE WEST 582-0657

MACE HOTLINE (Information - Voice Line) 882-9109

PRESIDENT

Kirk Revitzer

Detroit

882-9109

Compuserve: 70346,1642

BBS: 882-7104

VICE-PRESIDENT

Alva Thomas

Taylor

287-3512

Compuserve: 74065,334

BBS: 287-4824

TREASURER

Burt Gregory

Southfield

552-0273

PROGRAM COORDINATOR

Scott Garland

West Bloomfield

851-9453

CORRESPONDING SECRETARY

Sharie Middlebrook

Dearborn

581-5560

BBS: 582-0657

RECORDING SECRETARY

Dino Roggero

Redford

BBS: 531-1701

DISK LIBRARIAN

Dave Zappa

St. Clair Shores

773-8551

BBS: 771-4126

CASSETTE LIBRARIAN

Mike Landis

Clawson

589-1789

Compuserve: 72675,1023

MEMBERSHIP CHAIRMAN

Paul Wheeler

Detroit

538-3649

M.A.C.E. JOURNAL EDITOR

Ann McBain Ezzell

Birmingham

646-4455

NEXT MEETING: 9/17/85 7:00 PM

Southfield Pavilion--Ten & a Half Mile Road and Evergreen

M.A.C.E.
P.O. Box 2785
Southfield, MI 48037

\$20.00* FOR A ONE YEAR MEMBERSHIP
(*Payable to M.A.C.E.)

M.A.C.E. MEMBERSHIP APPLICATION

Name _____ Phone _____
Street _____
City _____ State _____ Zip Code _____
Company (if applicable) _____
System Description _____ Disk/Tape _____
Suggestions _____
I can help with ... _____

() New () Renewal

If a Renewal:

MACE # _____

Date _____ Coupon _____

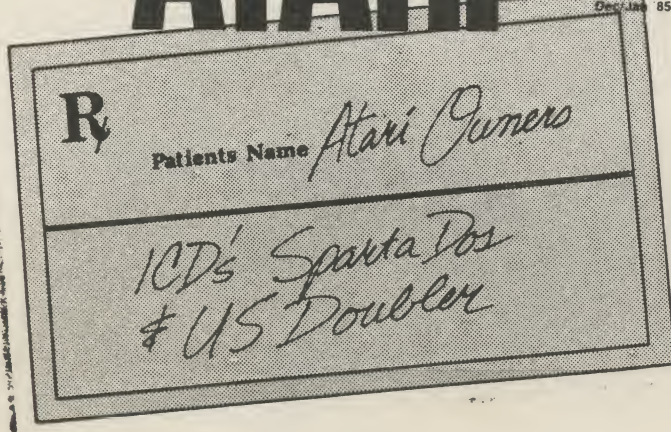
Amount _____ Membership Card Number _____

☐ Cash Expires _____

☐ Check Number _____

"IT ADDS NEW LIFE TO THE ATARI"

- Peter Ellison
Now Magazine
Dec. Jan. 85



Rather than hearing *our* claims for ICD's SpartaDOS and US Doubler, we think you'd rather know what others say:

"ICD has done something I didn't think was possible... a product so revolutionary it adds new life to the Atari... SpartaDOS is the best I have ever used... (it changed) my Atari's whole concept of what a Disk Operating System should be.

"Besides that, they created two chips (Ultra Speed Doubler) that will make your 1050 disk drive store almost twice as much data on a single disk and run much faster."

Thanks, Peter. What more can we say?

**Available through dealers or direct:
the US Doubler only \$69.95, including the new
SpartaDOS Construction Set!**

A hardware/software combination. Installation required; complete instructions provided. Add \$4.00 for shipping.



ICD, Inc.
1220 Rock Street, Suite 310, Rockford, IL 61101-1437
(815) 229-2999

**MICHIGAN ATARI COMPUTER ENTHUSIASTS
P.O. BOX 2785
SOUTHFIELD, MICHIGAN 48037**

\$ BULK RATE \$
\$ U.S. POSTAGE \$
\$ PAID \$
\$ PERMIT #232 \$
\$ STER HTS, MI 48077 \$
#####

**IMPORTANT DATED MATERIAL
PLEASE DO NOT DELAY**